

**ABSTRACT**

A digital stereo camera using a single sensor array to take both left and right images for stereo (three-dimensional) image capture. In one embodiment, a micro-lens array is used to focus, at a first instant in time, light ("left light") from a left lens system onto a sensor array for left image capture. Then, the micro-lens array is moved to focus light ("right light") from a right lens system onto the sensor array for right image capture. In another embodiment, a portion of the left light (the portion having a first polarized direction) and a portion of the right light (the portion having a second polarized direction) are directed to a sensor array; the second polarized direction being orthogonal to the first polarized direction. To capture the left image, a polarization filter is used to allow the left light (having the first polarized direction) to pass toward the sensor array while preventing the right light (having the second polarized direction) from reaching the sensor array. To capture the right image, polarization direction of the polarization filter is switched to allow only the right light (having the second polarized direction) to reach the sensor array.